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SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
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EXAMINER	
MAYS, T	
ART UNIT	PAPER NUMBER
185	9

DATE MAILED: 01/02/90

This is a communication from the examiner in charge of your application.

COMMISSIONER OF PATENTS AND TRADEMARKS

☐ This application has been examined ☒ Responsive to communication filed on 9/27/89 ☒ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), ~~____ days~~ from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☐ Notice of References Cited by Examiner, PTO-892.
2. ☑ Notice re Patent Drawing, PTO-948.
3. ☒ Notice of Art Cited by Applicant, PTO-1449
4. ☐ Notice of informal Patent Application, Form PTO-152
5. ☐ Information on How to Effect Drawing Changes, PTO-1474
6. ☐ _____

Part II SUMMARY OF ACTION

1. ☒ Claims 1-23 & 27 and 29-35 are pending in the application.
   Of the above, claims 24-26 are withdrawn from consideration.
2. ☒ Claims 28 have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1-23, 27 & 29-35 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☒ This application has been filed with informal drawings which are acceptable for examination purposes until such time as allowable subject matter is indicated.
8. ☐ Allowable subject matter having been indicated, formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. These drawings are ☐ acceptable; ☐ not acceptable (see explanation).
10. ☐ The ☐ proposed drawing correction and/or the ☐ proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved. ☐ disapproved (see explanation). However, the Patent and Trademark Office no longer makes drawing changes. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections MUST be effected in accordance with the instructions set forth on the attached letter "INFORMATION ON HOW TO EFFECT DRAWING CHANGES", PTO-1474.
12. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

PTOL-326 (Rev. 7-82) EXAMINER'S ACTION

Claims 1-23, 27 and 29-35 are pending in the instant application, with claims 24-26 withdrawn from consideration as being drawn to an invention non-elected with traverse in Paper No. 8 and claim 28 cancelled by amendment filed in Paper No. 8.

Applicant's election of Group I, claims 1-23 and 27-31, in Paper No. 8, is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP 818.03(a)).

This application contains claims drawn to an invention non-elected with traverse in Paper No. 8. A complete response to the final rejection must include cancellation of the non-elected claims or other appropriate action. See 37 CFR 1.144 and MPEP 821.01.

35 U.S.C. §101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.

Claims 15-22 and 34 rejected under 35 U.S.C. §101 because the invention as disclosed is inoperative and therefore lacks utility.

The instant claims stand rejected for the reasons of record as stated at pages 3 and 4, of the last Office action.

Applicant traverses the instant rejection on the grounds that allegedly there is utility and cites the reference of Lathe et al, of record, to show that the inoculation of a recombinant vaccinia virus bearing a viral gene encoding a tumor specific antigen (TSA) coincided in some animals with halted tumor growth and tumor elimination. First, it is noted that it is unclear from the study of Lathe et al that the expression of genes encoding TSA or the recombinant virus, per se, resulted in the elimination of tumors. Second it is noted that the instantly claimed gene is of a cellular origin, not viral as described by Lathe and pointed out by applicant (page 11, applicant's instant response.) Applicant has failed to present any evidence on the instant record that the claimed method has utility. Applicant's reliance upon the method of use of inoculation of viral gene products to support the utility of a method of use of inoculation of cellular gene products is not considered persuasive, because applicant has failed to present any data or other supportive evidence that the inoculation of the recombinant virus bearing cellular

genes will result in expression intracellularly and in sufficient amounts to produce the instantly claimed result.

The following is a quotation of the first paragraph of 35 U.S.C. §112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to under 35 U.S.C. §112, first paragraph, as failing to provide an enabling disclosure and failing to provide an adequate written description of the invention.

The specification stands under objection and the claims 1-23, 27 and 29-35 rejected for the reasons of record as stated at pages 4-6, of the last Office action.

Applicant's intent to comply with the deposit requirement is acknowledged. However, applicant's failure to timely comply may preclude entry of said declaration.

Affidavits or declarations properly executed filed after final rejection of the claims are not consider d timely filed and will not be considered unless a satis-

factory showing is made under 37 CFR § 1.116(b) or 37 CFR § 1.195. In conformance with Office policy for compact prosecution, the outstanding rejection is maintained and no allowable subject matter can be noted in view thereof. Piecemeal examination of applications is not permitted. See MPEP § 707.07(g).

Applicant also traverses, at pages 13 and 14 of applicant's instant response, the additional ground upon which the specification stands under objection (first full paragraph of page 6 and the paragraph bridging pages 6 and 7 of the last Office action.) Applicant urges that the reference by Takahashi et al and Yarden et al, inter alia, teach the similarities and homologies among the various oncogene or proto-oncogene encoding tyrosine kinases that possess a an extracellular binding domain, a membrane-spanning segment and intracellular domain possessing the kinase activity. Applicant then contends that the instantly claimed invention is therefore enabled in its breadth. However, the instant claims are not so limited as urged to oncogene or proto-oncogene encoding tyrosine kinases that possess a an extracellular binding domain, a membrane-spanning segment and intracellular domain possessing the kinase activity. For example, the recitation of a "protein kinase" is not considered a

functional equivalent of the tyrosine kinase as disclosed in the art. Applicant has failed to teach either the construction or use of vectors comprising oncogene or proto-oncogene encoded kinases other than that of the tyrosine kinase, of the neu gene.

Claims 1-13, 15-23, 27 and 29-35 rejected under 35 U.S.C. 112, first paragraph, as the disclosure is enabling only for claims limited to pEVAC-neu, ABT 9-4, and to methods for immunizing mice against the tumorigenicity of neu transformed NIH 3T3 cells that are administered subsequent to immunization. See MPEP §§ 706.03(n) and 706.03(z).

The instant claims stand rejected for the reasons of record as stated at pages 7-9, of the last Office action.

Applicant traverses the instant rejection on the grounds as discussed supra. Applicant urges in view of the teachings of the art, the ordinary skilled artisan allegedly would not require an undue level of experimentation to make and/or use the claimed invention.

However, as discussed supra, the teaching in the art of cloning and expressing oncogenes or proto-oncogenes encoding a tyrosine kinase is not considered sufficiently supportive to clone and express all oncogene products,

all proto-oncogene products or all protein kinases as embraced by the instant claims.

Claims 1-13, 15-23, 27 and 29-35 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject, matter which applicant regards as the invention.

Claim 1 et seq recite "cellular origin" renders the claims vague and indefinite because it is unclear what characteristics or properties separate a gene isolated from a cell's genome from that isolated from a viral genome, particularly when viral genes originated from the cellular genome.

Claim 3 et seq recite "of human origin" which similarly renders the claims vague and indefinite because applicant has urged the similarity among the various tyrosine kinase gene products. It is unclear in what manner or by what characteristics applicant intends to separate the claimed gene products to identify those of human origin as opposed to those of other origin.

Claims 10, 19 and 30 recite "oncogene is . . . or immunogenic portions thereof" which renders the claims vague and indefinite because it is unclear whether applicant intends to claim the immunogenic portion of the

gene, per se, or the immunogenic portion of the gene product.

Claim 11 recites "which is responsible or potentially responsible" which renders the claims vague and indefinite because the metes and bounds of the claims can not be determined for so tenuous a limitation as to what gene product may "potentially" be responsible for oncogenic activity.

Claim 12 recites "altered growth factor" which renders the claims vague and indefinite because it is unclear whether applicant intends to claim a functional, physical, genetic or biological alteration or an alteration that is silent.

Claims 15-22 and 34 recite "capable of expressing" which renders the claims vague and indefinite because it is unclear whether applicant intends to claim a virus that expresses or merely has the potential to express. Additionally, the claim, drawn to a method for immunization, is considered incomplete for failing to recite the dose of administration of said virus (eg., an effective immunizing dose.) A method claim should set forth positive active steps to set out and circumscribe a particular area with a reasonable degree of precision and

particularity. Ex parte Erlich 3 USPQ2d 1011, 1017 (Pat.Bd. Appl. and Interf. 1987)

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this country or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1),(2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
>
> Subject matter developed by another person, which qualifies as prior art only under subsection (f) or

> (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 1-23, 27 and 29-35 rejected under 35 U.S.C. 102 (a) as anticipated by or, in the alternative, under 35 U.S.C. 103 as obvious over Lathe.

The instant claims stand rejected for the reasons of record as stated at page 12, of the last Office action.

Applicant traverses the instant rejection on the grounds that allegedly the gene of Lathe is of viral origin whereas that instantly claimed is of human origin. It is pointed out that in view of the indefiniteness of the reliance upon the source of origin (see discussion supra), it can not be determined whether the instantly claimed gene is of ultimately human origin or evolved from or the result of integration of a viral gene and thus anticipate that of Lathe.

The Office is in no position to determine experimentally whether or not, in an invention such as that at issue, the subject matter is the same as that of the reference. Accordingly, in such instances, this shifts the burden to the applicant who has the resources to make such a determination and is in a better position to

determine experimentally the differences between the invention as claimed and that of the art (In re Pye, 355 F.2d 641, 148 USPQ 426 (CCPA 1966)).

Alternatively, in view of the function of said gene (tyrosinase kinase), it would have been obvious to chose and employ any tyrosinase kinase gene in a manner as taught by Lathe, because it appears that the instantly claimed gene is a functional equivalent thereof, whose selection appears predicated upon its known and expected properties.

Applicant's traversal upon the grounds of unexpected results, founded, inter alia, upon the unexpected immunogenicity of a cellular gene product compared with the expected immunogenicity of a viral gene product is not considered persuasive. First, the claims fail to recite the exclusive limitation that no viral (ie., immunogenic) polypeptide portions are expressed with the cellular gene product. Second, other cellular gene products are known in the art that are immunogenic when expressed in a context other than the native environs.

Claims 1-23, 27 and 29-35, rejected under 35 U.S.C. 103 as being unpatentable over Kornbluth or Mansour in view of Davis and Paoletti.

The instant claims stand rejected for the reasons of record as stated at pages 12-14, of the last Office action.

Applicant traverses the instant rejection on essentially the same grounds as discussed supra in traversal of the rejection of the claims over Lathe.

The response thereto is incorporated herein.

Applicant has failed to limit the claims to the expression of polypeptides of only cellular origin. Even assuming arguendo that the claims were so limited, it is pointed out that immunogenicity is a complex property. The simplistic allegation that viral gene products are expected to be immunogenic whereas cellular gene products are not, fails to address the environs of expression, the purity or associations of the expressed gene product or host in which said genes are expressed (ie., the expression of a human cellular gene product in a mouse would not enjoy to the same extent the considerations of non-immunogenicity as would a human cellular gene product expressed in a human host.)

Applicant's amendment necessitated the new grounds of rejection. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). The practice of automatically extending the shortened statutory period

an additional month upon the filing of a timely first response to a final rejection has been discontinued by the Office. See 1021 TMOG 35.

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 CFR 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to T. D. Mays, whose telephone number is (703) 557-5136.

Any inquiry of a general or clerical nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 557-0664.

TM

December 28, 1989, retyped December 29, 1989

THOMAS MAYS
PRIMARY EXAMINER
ART UNIT 185